



PRELIMINARY STORMWATER REPORT

for

COUNTRYSIDE MANOR WOBURN STREET LEXINGTON, MASSACHUSETTS

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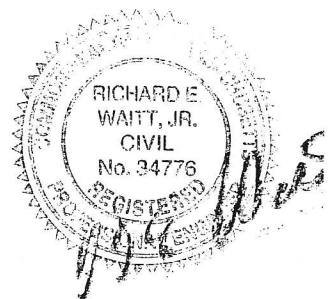


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Summary

Meridian Associates, Inc. (MAI) has performed a preliminary drainage analysis of the existing and proposed watersheds associated with stormwater runoff flowing across the property currently known as 509 Woburn Street. This drainage analysis was performed utilizing available information and field observations. Using this available information and field observations in conjunction with the assumptions outlined in this report, MAI is confident that a Stormwater Management System can be proposed to reduce peak rates and volumes of runoff from those generated under existing site conditions. This Stormwater Management System will also be designed in accordance with guidelines set forth by local and state regulations and performance standards (i.e. water quality and quantity).

Existing Conditions

The parcels being analyzed are identified as Lots 1A, 1B, 1C, 1D, and 2 on Lexington Assessor's Map 53, and have a total combined area of approximately 2.45 acres. An offsite area located directly to the northeast of these properties (across the Woburn/Lexington Town Line) also generates runoff that drains across the locus properties was included in the existing conditions model. The existing subcatchment areas have been modeled as either wooded or grassed surfaces in good condition (with a Hydrologic Soil Classification of a C soil type - according to SCS soil maps, Middlesex County). It should be noted that credit was not taken for any existing impervious surfaces located within this subcatchment in order to be in conformance with Performance Standard 6 of the Lexington Wetland Bylaw. The land on the whole drains from the southeast to the northwest towards Woburn Street, where it either enters the drainage system located in Woburn Street (that transports runoff to the existing wetland system), or continues overland into the existing wetland located in the center of the Countryside Village property.

One (1) Design Point was identified for this analysis. This Design Point was selected to be the northwestern corner of the existing wetland system (basically where the wetland meets Woburn Street).

Proposed Conditions

The applicant is proposing the construction of a multi-unit apartment building with an approximate footprint area of 26,000 square feet with a roof overhang extending approximately an additional 3,000 square feet beyond the footprint. Beyond the proposed roof area, an approximate 22,000 square feet of additional impervious surfaces will be constructed on Lot 2. These additional impervious surfaces will include new driveways, walkways and surface parking areas. The remaining areas of the disturbed parcels, after completion of construction, will be composed of grassed and landscaped areas.

Two (2) subsurface infiltration systems are being proposed on site for groundwater recharge and peak rate/volume attenuation. One system will infiltrate a portion of the proposed roof, as well as a portion of the proposed parking areas. The second system will infiltrate runoff from the remainder of the proposed roof, as well as runoff from grassed areas located to the north of the proposed building (including offsite area described earlier in this report). These systems will be sized to sufficiently handle storm water runoff generated from the 2, 10, and 100-year storm events. Also, both systems will have overflow connections into the existing drainage system located in the Countryside development.

All stormwater runoff (except that generated by the proposed roofs) that enters a formal drainage system will be directed through a water quality device (such as a Stormceptor, Vortech Unit, or approved equal) prior to discharge into a subsurface infiltration system or into the existing wetland system. All proposed catchbasins will also be equipped with a four foot deep sump and a tee/boot to remove suspended solids and oils.

The same design point identified in the Existing Conditions has been selected and analyzed in the Proposed Conditions. The proposed development will not modify the slope of the land in a manner to direct runoff to a location not previously receiving runoff under existing site conditions.

Test Pit

A deep hole test pit investigation was performed by April C. Ferraro (Certified Soils Evaluator- Commonwealth of Massachusetts) of MAI on December 29, 2009. The soil log for this test pit is depicted on the included Site Analysis Map and Site Construction Plans. The Estimated Seasonal High Groundwater elevation and soil texture of the parent material was identified during this investigation. This information was used as a guide in the preliminary design of the two proposed subsurface infiltration systems described above. MAI is aware that additional testing of this sort will need to be performed on the property before a final design of the Stormwater Management system can be completed to assure adequate separation from groundwater, absence of ledge in the areas of infiltration, and a similar soil texture are present. MAI established the groundwater elevation for this test pit by a limited field survey, utilizing known elevations in the immediate area of the property.

Conclusion

At this time, MAI's design and preliminary drainage analysis for the pre and post-construction conditions yield the following results:

SUMMARY OF STORMWATER RUNOFF:

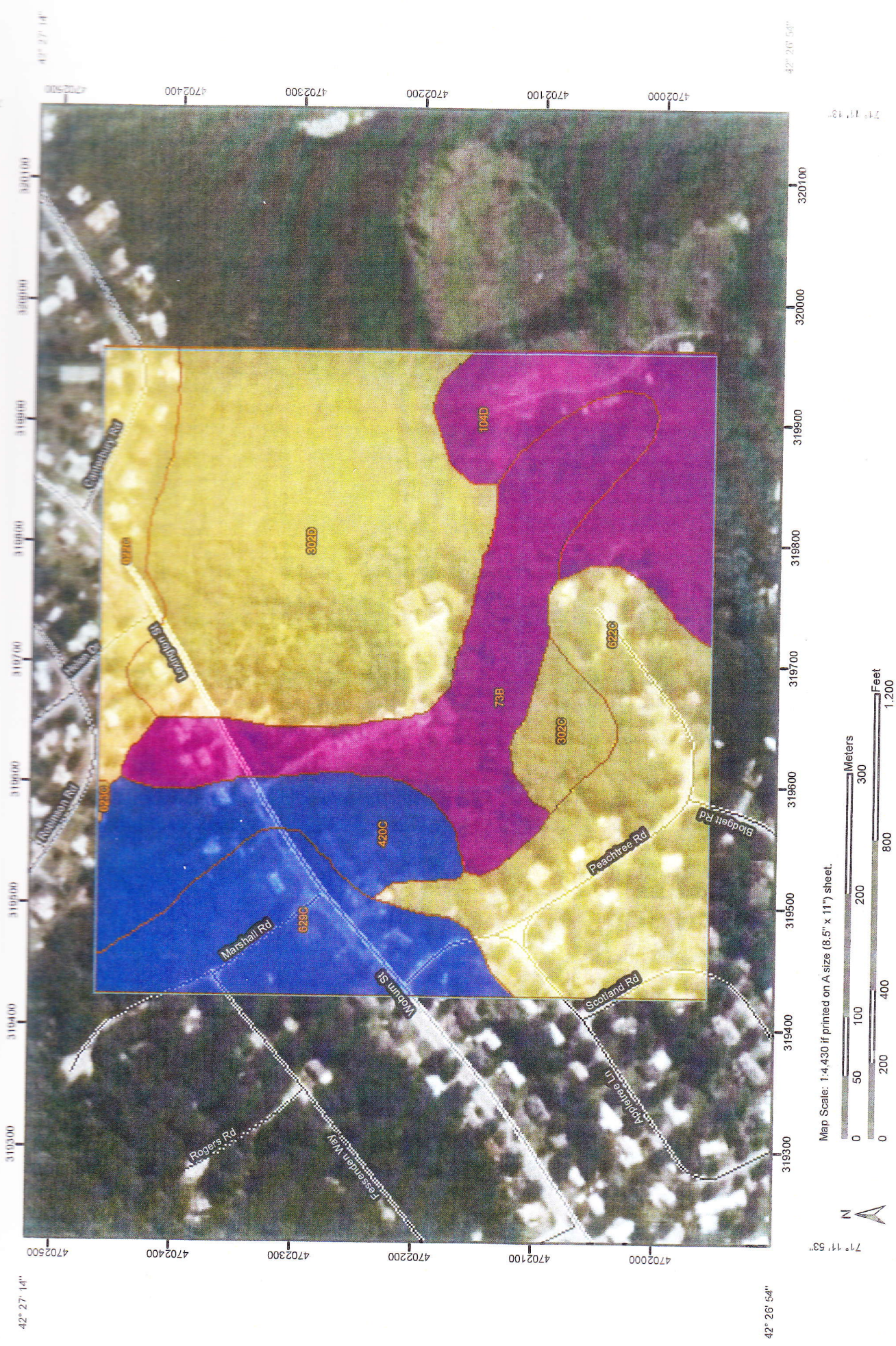
SUMMARY OF PEAK FLOW RATES (CFS) AND VOLUMES (CF) AT DESIGN POINT 1

	<u>2-Year 24-Hour</u> <u>Storm Event</u>		<u>10-Year 24-Hour</u> <u>Storm Event</u>		<u>100-Year 24-Hour</u> <u>Storm Event</u>	
	<u>CFS</u>	<u>CF</u>	<u>CFS</u>	<u>CF</u>	<u>CFS</u>	<u>(CF)</u>
Existing Conditions	2.19	7,642	5.28	16,983	10.01	31,642
Proposed Conditions	2.16	6,902	4.20	13,263	7.07	22,532


















As this table demonstrates, there will be no increase in the peak rate or volume of runoff during the 2, 10, or 100-year storm events.

12/23/2009
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Web Soil Survey
National Cooperative Soil Survey



MAP LEGEND

Area of Interest (AOI)	
	Area of Interest (AOI)
Soils	
	Soil Map Units
Soil Ratings	
	A
	A/D
	B
	B/D
	C
	C/D
	D
Not rated or not available	
Political Features	
	Cities
Water Features	
	Oceans
	Streams and Canals
Transportation	
	+++ Ralls
	Interstate Highways
	US Routes
	Major Roads
	Local Roads

MAP INFORMATION

Map Scale: 1:4,430 if printed on A size (8.5" x 11") sheet.
The soil surveys that comprise your AOI were mapped at 1:25,000.
Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 9, Apr 15, 2009

Date(s) aerial images were photographed: 7/10/2003; 8/14/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Middlesex County, Massachusetts				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73B	Whitman fine sandy loam, 0 to 5 percent slopes, extremely stony	D	10.0	15.0%
104D	Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	D	7.0	10.5%
302C	Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony	C	1.8	2.7%
302D	Montauk fine sandy loam, 15 to 25 percent slopes, extremely stony	C	19.1	28.6%
420C	Canton fine sandy loam, 8 to 15 percent slopes	B	5.9	8.8%
622C	Paxton-Urban land complex, 3 to 15 percent slopes	C	16.0	23.9%
623C	Woodbridge-Urban land complex, 3 to 15 percent slopes	C	0.1	0.1%
629C	Canton-Charlton-Urban land complex, 3 to 15 percent slopes	B	6.9	10.4%
Totals for Area of Interest			66.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower